Oxygen/Nitrogen/Hydrogen Analyzer

EMGA-930

Oxygen
Nitrogen
Hydrogen
EMGA-930 is a simultaneous oxygen/nitrogen/hydrogen elemental analyzer with high accuracy and repeatability suited to advanced R&D as well as quality control in the markets of steel, new materials, catalysts and many others. This is a new generation model optimized to fit the user’s needs.

**Super High Performance**

- **Wide measurement range**
  - **Oxygen**: ~5%(m/m) & **Nitrogen**: ~3%(m/m)
  - **Hydrogen**: ~0.25%(m/m)
  - Dual detectors for CO and CO₂ provide the widest measurement range for oxygen.
  - Optimized TCD design for nitrogen.
  - Mounting NDIR, H₂O detector that measures hydrogen enables to analyze 3 elements simultaneously.

- **Precision**
  - Oxygen/Nitrogen: SD≤0.02μg/g or RSD≤0.5% whichever is larger (Reference gas)
  - SD≤0.3μg/g (Standard sample value 10μg/g or less)
  - RSD≤1.0% (Standard sample value 0.01% to 0.02%)
  - Hydrogen: SD≤0.04μg/g or RSD≤2.0% whichever is larger (Reference gas)

- **Standard method**
  - EMGA-930 fulfills requirements of the standard methods for analysis of steel, titanium, tantalum, ceramics etc.
  - JIS G1228:1997

**Simple Operation**

- **Simple operation**
  - EMGA-930 uses two automation systems for loading and disposing crucibles and for cleaning the electrodes after measurement. Automation sequences allow operation by simply positioning the sample and pushing the start button. The operator has to specify the method and the sample’s name in the software. The crucible loader and auto cleaner avoid operator contact with carbon dust by providing clean operating conditions.

**User-friendly Software**

- **Measurement window**
  - Simple software allows easy operation. Extracted gas signals are displayed in real time numerically as well as graphically with curves that include temperature level.
  - Graphs are saved automatically. In the measurement window, sample weight can be registered automatically.
  - Results are saved in a data table for easy management.

- **HORIBA originality - Maintenance navigator**
  - Maintenance counter informs users about consumables replacement to assure high accuracy results. In the same window, you can reach pictures and videos illustrating maintenance operations by a simple click. Operators can freely have a look at the concerned area by playing with the 3D display. As the navigator describes the easy-to-understand procedure for replacing parts, operators can perform routine maintenance without any experience or technical knowledge.

**Analysis examples of JSS samples containing low concentration of Oxygen, Nitrogen and Hydrogen**

<table>
<thead>
<tr>
<th></th>
<th>JSS GS-6b</th>
<th>JSS366-8</th>
<th>JSS GS-1d</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>O</strong></td>
<td>3.42</td>
<td>7.72</td>
<td>1.59</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>3.28</td>
<td>7.74</td>
<td>1.60</td>
</tr>
<tr>
<td><strong>H</strong></td>
<td>3.48</td>
<td>7.51</td>
<td>1.61</td>
</tr>
<tr>
<td>1</td>
<td>3.25</td>
<td>7.69</td>
<td>1.55</td>
</tr>
<tr>
<td>2</td>
<td>3.51</td>
<td>7.25</td>
<td>1.62</td>
</tr>
<tr>
<td>Average value</td>
<td>3.39</td>
<td>7.58</td>
<td>1.60</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>0.11</td>
<td>0.20</td>
<td>0.02</td>
</tr>
</tbody>
</table>
Fully Supported Accessories

To achieve high-speed and simple operation all accessories are included in the EMGA-930.

**Crucible loader** (Automated crucible supply system)

Precise capture and positioning of crucibles by rotary mechanism

Maximum stock: 100pcs. Compatible with normal or long type crucibles.

**Auto cleaner**

Two rotating brushes clean the upper and lower electrode after each measurement. The vacuum cleaner prevents contamination by removing dust.

**Crucible waste box**

About 200 crucibles can be held in the waste box.

**Sample/Flux dual loading mechanism**

Thanks to this mechanism, sample and flux drop independently allowing outgassing of the flux at low temperature prior to the analysis. The benefits are prevention of flux spatter, control of crucible erosion and optimization of flux outgassing temperature. As a result, optimization of flux efficiency and blank reduction contribute to high accuracy measurements.

**Easy replacement of electrode and reagent tubes**

**Gas flow diagram**

- Oxygen determination: 2 NDIR detectors for high accuracy among the full measurement range. Automatically controlled by the software.
  - CO for high oxygen levels
  - CO₂ for low concentration of oxygen with high sensitivity
- Hydrogen determination: H₂O with NDIR (Non Dispersive Infra Red analyzer)
- Nitrogen determination: N₂ with Thermal Conductivity Detector (TCD)

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